J. MICHAEL KALER, SBN 158296
9930 Mesa Rim Road, Suite 200
San Diego, California 92121
Telephone (858) 362-3151
michael@kalerlaw.com

MELODY A. KRAMER, SBN 169984
9930 Mesa Rim Road, Suite 1600
San Diego, California 92121
Telephone (858) 362-3150
mak@kramerlawip.com

Attorneys for Plaintiff JENS ERIK SORENSEN, as Trustee of SORENSEN RESEARCH AND DEVELOPMENT TRUST

UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

JENS ERIK SORENSEN, as Trustee of SORENSEN RESEARCH AND DEVELOPMENT TRUST, Plaintiff v. LEXAR MEDIA, INC., a Delaware Corporation; and DOES 1 – 100, Defendants. and related counterclaims.	Case No. 08 CV 00095 JW **DECLARATION OF STEPHEN PETRIE, Ph.D., IN SUPPORT OF PLAINTIFF'S AMENDED MOTION FOR APPLICATION OF 35 U.S.C. § 295 PRESUMPTION OF INFRINGEMENT** Date: June 30, 2008 Time: 9:00 A.M. Courtroom 8, 4th Floor Judge: The Hon. James Ware *Oral Argument is Respectfully Requested at Hearing on This Matter.*

I, STEPHEN PETRIE, Ph.D., declare:

1. I am not a party to the present action. I am over the age of eighteen. I have personal knowledge of the facts contained within the following paragraphs, and could and would competently testify thereto if called as a witness in a court of law.

2. This Declaration contains the following information:

a. Summary of expert opinion

b. My qualifications and work history in the field of plastic injection molding (Section A, commencing on page 2);

c. The need for the '184 patented process technology.

d. Expert analysis and opinion: the accused products include all discernible elements of the '184 process, as specified below.

A. SUMMARY OF EXPERT OPINION

3. For all the reasons that are explained in greater detail herein, it is my opinion that the two-plastic, injection molded external plastic shells of the LEXAR MEDIA JumpDrive 128MB (the "Accused Products") and all Lexar two-plastic, injection molded components manufactured in a similar manner as said JumpDrive are manufactured using a process that employs all the discernible elements of Claim 1 of United States Patent No. 4,935,184 ("the '184 patent").

4. The Accused Products exhibit all the essential discernible elements required to perform the '184 patented invention.

5. The Accused Products are thin-walled, hollow products, formed of at least two plastic materials having different characteristics, have a closed end and an open end, and have laminated walls terminating in a rim.

6. To the extent that it can be determined from examination of the Accused Products, the Accused Products are substantially likely to be produced in two cavities made up of one common mold part and different complementary mold parts.

7. Further, the Accused Products possess one or more stabilizing regions in the first plastic material formed such that they resist undesirable relative movement between

the mold parts during injection of a second laminated layer as taught in the '184 patent.

B. QUALIFICATIONS OF THE DECLARANT

8. I am currently a tenured professor in the Plastics Engineering Department at University of Massachusetts, Lowell. The Plastics Engineering Department was founded in 1954 on the recommendation of a study team from industry and academia. The B.S. program graduated the first class in 1958, and the program has been accredited by Accreditation Board for Engineering and Technology ("ABET") continuously since 1977. This is the only ABET accredited Plastics Engineering program in the USA. Subsequent graduate programs instituted in our Department were programs for a M.S. in Plastics Engineering (1968), and a Ph.D. in Chemistry (with an option in Polymer Science/Plastics Engineering) (1980), and a D.Eng. in Plastics Engineering (1986).

9. I teach courses in adhesives, composites, injection molding, mold design, physical properties of plastics, polymer materials, polymer processing, polymer science, textiles, and applied statistics. I specialize in fracture of polymers, structure-property relationships, composite materials, and adhesives.

10. My educational background includes a doctorate degree (Ph.D.) in Materials Science: Polymer Science from the *University of Connecticut* in 1977, a Master's degree and a Bachelor's degree in Textile Chemistry from *Lowell Technological Institute* in 1968 and 1967, respectively.

11. My current research areas grew out of my earlier work with mechanical testing of fibers, yarns, and fabrics. I was a director of Research at the Heminway and Bartlett Manufacturing Company in Watertown, Connecticut where I did work on processing textile fibers to improve strength by orientation. From June 1979 through October 1976, I was a Materials Research Engineer at the Composites Development Division, United States Army Research Laboratory, Watertown, Massachusetts where I did research in extrusion, injection molding, and rotational

molding. I also did research on the effects of orientation on the mechanical properties of polymers and composites. I also spent a seven-month sabbatical in Australia at the Materials Research Laboratory in Ascot Vale, Victoria working on the crazing of polymers.

12. Prior to going to University of Massachusetts, I was an assistant professor at Southeastern Massachusetts University in North Dartmouth, Massachusetts. While at SMU my basic research areas included orientation effects and diffusion in polymers.

13. Over my career, I have participated in a number of processional conferences in societies dealing with issues concerning these research subjects. .

14. My curriculum vita is attached as Exhibit A. My curriculum vita includes a list of all publications authored by me within the preceding ten years.

15. I have physically examined the Accused Products and the Declaration of Paul Brown previously submitted to the Court in this case. I have determined that I am in agreement with all substantive matters in the Declaration of Paul Brown. Further, I have concluded that the Accused Products are substantially likely to include every element of Claim 1 of the ‘184 patented process to the extent that can be determined without access to the manufacturer’s first-hand information.

C. THE NEED FOR THE '184 PATENTED PROCESS TECHNOLOGY.

16. The ‘184 patent, entitled "Stabilized Injection Molding When Using a Common Mold Part With Separate Complimentary Mold Parts," was issued on June 19, 1990.

17. The ‘184 patent provides a long-sought elegant solution to a pervasive problem in the injection molding of hollow plastic products, i.e., how to stabilize the mold parts against relative movement during the highly pressurized injection of molten plastic.

18. The ‘184 patent claims a method for stabilizing the mold parts against relative movement during the second injection of an injection molding process

whereby laminated plastic parts are produced sequentially in two cavities made up of at least one common mold part and at least two different complementary mold parts. The '184 patent specifically claims a method to stabilize the mold parts during the second or later plastic injection by molding one or more stabilizing regions into the first plastic material component(s) that rigidly secure the two mold parts against relative displacement during the second or later injection.

19. The presence or absence of the elements of the '184 patent can be determined with a high degree of accuracy through physical and destructive examination of the Accused Product. All of those elements that can be determined from an assessment of the Accused Product are present. With regard to those few elements for which absolute determination is not possible without inspection of the mold tooling, the best evidence that can be gathered from examination of the Accused Products, and consideration of the commercially reasonable techniques that may be employed, shows that those elements were most reasonably present in the Accused Processes.

20. Absolute confirmation of the existence of a common mold part requires access to the actual injection molds and manufacturing equipment. Most high quality products, as the Accused Products, are made in molds comprising a common mold part.

21. The '184 patent discloses a method for solving the explained pervasive problem in the injection molding of hollow plastic products. The problem it addresses is how to stabilize against undesirable relative movement between the mold parts during the highly pressurized injection of molten plastic into the mold cavity.

22. Relative movement between the mold parts is undesireable, because it causes misalignment of the mold parts and results in products with sides or layers of uneven dimensions if not adequately controlled. These uneven dimensions can also necessitate greater cooling times for such non-optimal heavier dimensioned product

walls to solidify, thereby slowing the production cycle.

23. The '184 patented method is directed toward stabilizing the mold parts against relative movement during injection molding of the second layer of laminated plastic products produced in two cavities made up of one common mold part and different complementary mold parts.

24. The '184 patent teaches a method to stabilize the mold parts against relative movement during the second or later plastic injections by molding one or more stabilizing regions of an earlier injected plastic material components that rigidly secures the two mold parts against displacement during the second or later injection.

25. By stabilizing the mold parts against relative movement during the injection process, hollow products may be produced having improved control of product dimensions.

26. The issue of relative movement of mold parts is a constant problem in injection molding of hollow products.

27. The relative mold parts movement problem causes misalignment of the mold parts and results in products with walls of uneven dimensions if not adequately controlled. The need for stabilization against relative mold parts movement is critical for two separate reasons.

28. First, plastic injection molding requires the use of high injection pressures to fill the cavity. During injection molding, molten plastic is injected into the mold through small injection gates. The mold walls are cooler than the melting temperature of the plastic, and serve to cause the plastic to freeze back into a solid state forming the finished product. In the narrow space with cool mold walls on both sides, the plastic will tend to freeze solid, whereby it is necessary to fill the cavity before the flowing plastic cools and solidifies to block the flow path.

29. The use of high injection pressures causes the plastic to flow more rapidly through the mold cavity, so that the cavity becomes completely filled before

the plastic freezes to block the flow pathways.

30. These high injection pressures increase the tendency toward core displacement during injection, making the requirement of a method for limiting core displacement critical.

31. The use of high injection pressures to obtain proper mold cavity fill before the plastic solidifies when molding products is one reason for using methods to reduce core displacement.

32. When molding laminated products, there is a second reason why dimensional control is more critical. Laminated products have thin walls that are usually made with narrower dimensional tolerances than thicker-walled products. With thin laminated walls, even small variations in wall thickness could make the product unsuitable for its intended usage.

33. Relative movement of the mold parts tends to make the dimensions thicker on one side of the product, and comparatively thinner on the opposing side. Therefore, the resulting product dimensions may be too thick to fit where needed on thicker side, or the dimensions may be unacceptably thin and subject to damage or structural failure in areas which are thinner than designed as a result of the misalignment of the mold parts caused by the relative movement of the mold parts.

34. Moreover, the product side that is thus forced to be thicker than designed now requires a longer cooling time to properly solidify, as thicker layers of plastic require costly longer cooling periods to solidify.

35. Use of the '184 process offers significant benefit for plastic parts, such as the Accused Products sold by Lexar. For instance, the improved control of dimensions allowed by the process can be used to produce plastic cases that use thicker layers of plastic only in areas that need the strength and can otherwise be made thinner, and thereby with less plastic material than would otherwise be required.

36. Thinner layers of plastic solidify more rapidly than thicker layers

during the injection process. Because of this, other factors being equal, the thinner products not only save materials, but also can be produced with shorter cycle times to reduce the overall cost of the product.

37. The '184 patent thus teaches a method for injection molding hollow, thin-walled plastic products, having closed and open ends with laminated walls terminating in a rim at the open end, where relative movement between the common mold part and the second complementary mold part is impeded during injection of the second or later plastic materials to better control the thickness of the product.

D. EXPERT ANALYSIS AND OPINION: THE ACCUSED PRODUCTS INCLUDE ALL ELEMENTS OF THE '184 PROCESS

38. I have personally examined the ACCUSED PRODUCTS, including examining a sample that had been disassembled and subjected to destructive testing.

39. My examination of the relevant features of the ACCUSED PRODUCTS, and my knowledge of practices in the plastic injection molding field together form the basis of my determination that the ACCUSED PRODUCTS with high confidence are manufactured utilizing the '184 process as detailed further below.

40. I have personally examined and analyzed the ACCUSED PRODUCTS for the use of the '184 patented process.

41. In my opinion, the ACCUSED PRODUCTS are plastic products substantially likely to be made using the '184 patented process. From my examination and analysis, it appears that the ACCUSED PRODUCTS are manufactured utilizing the '184 patented process as described in Claim 1 of the '184 patent as follows:

42. The ACCUSED PRODUCTS exhibit each of the elements of the '184 patented process in their manufacture that can be discerned without access to the mold tooling.

43. The ACCUSED PRODUCTS are thin-walled, hollow plastic products.

44. The ACCUSED PRODUCTS have laminated walls produced by injection molding utilizing a first mold cavity and a second mold cavity.

45. My examination shows that portions of the ACCUSED PRODUCTS walls are laminated, and the lamination is terminated at the rim of the ACCUSED PRODUCTS.

46. The ACCUSED PRODUCTS possess stabilizing regions molded into the first plastic material components that rigidly secure the two mold parts against displacement during the second injection.

47. The ACCUSED PRODUCTS have a closed end and an open end, and are produced by cyclic injection molding.

48. The ACCUSED PRODUCTS are molded utilizing a first mold cavity and a second mold cavity, where the first mold cavity utilized to mold the ACCUSED PRODUCTS is formed of a first common mold part and a first complementary mold part, and the second mold cavity utilized to mold the ACCUSED PRODUCTS is with high confidence formed of the same first common mold part (assumed hereafter) and a second complementary mold part.

49. The following steps are followed in production of the ACCUSED PRODUCTS: the first common mold part and the first complementary mold part are combined to assemble the first mold cavity into which a first plastic material is injected. The injected first plastic material is solidified to form a first plastic material component of the ACCUSED PRODUCTS. The first common mold part and the first complementary mold part then separate.

50. Next, the first common mold part and the second complementary mold part are then combined to assemble the second mold cavity of the ACCUSED PRODUCTS, with the first plastic material component attached to the first common mold part during assembly of the second mold cavity. The first plastic material component is then contained within the second mold cavity. The first plastic material component has one or more stabilizing regions that rigidly secure the first

common mold part, in position in relation to the second complementary mold part.

51. A second plastic material having different characteristics than the first plastic material is injected into the second mold cavity. The second plastic material then solidifies to form a second plastic material component that combines with the first plastic material component to produce the ACCUSED PRODUCTS.

52. During the injection of the second plastic material, the stabilizing regions of the first plastic material component restrict displacement of the first common mold part in relation to the second complementary mold part. The stabilization allows the ACCUSED PRODUCTS to be produced with improved control of its dimensions.

53. Both the first plastic material and the second plastic material of the ACCUSED PRODUCTS reach the rim of the Accused Products, forming a laminated area at the rim, thus satisfying all elements of Claim 1 of the '184 patent.

54. The presence of the elements of the '184 patent can be determined with high likelihood through physical and destructive examination of the Accused Product. All of those elements that can be determined from an assessment of the Accused Product have been determined to be present. With regard to those few elements for which absolute determination cannot be made without inspection of the mold tooling, the best evidence that can be gathered from examination of the Accused Products shows that those elements were very likely present in the Accused Processes. Complete confirmation of the existence of a common mold part usually requires access to the actual injection molds and manufacturing equipment.

55. My investigation leads me to conclude that each of the Accused Products are very likely to be produced with a process that infringes claim 1 of the '184 patent. These conclusions are derived from combining my knowledge of commercial injection molding practices, and my examination of the Accused Products. I have concluded that the only commercially practical processes in which to make the Accused Products are processes that infringe claim 1 of the '184 patent.

I have further concluded that the physical evidence indicates the use in the Accused Products of processes that infringe claim 1 of the '184 patent, thus satisfying the "substantially likely" requirement of 35 U.S.C. § 295.

I declare under penalty of perjury under the laws of the United States of America that the foregoing paragraphs are true and correct to the best of my own personal knowledge.

DATED this Tuesday, May 20, 2008.

/s/ Stephen Petrie, Ph.D.

Stephen Petrie, Ph.D., Declarant

Exhibit A